

Data processing apparatus that identifies a communication clock frequency

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The invention relates to a data processing apparatus with an input port for receiving a communication signal.

5 In data processing equipment, data serial bit streams are often used to communicate data between different apparatuses. Successively received bits are formed into data words of for example 8 bits. During reception, sampling of the different bits from the stream is usually performed under control of a clock signal. A clock signal with a predetermined fixed frequency is often used for this purpose, but selection between
10 alternative frequencies is also known. From PCT patent application No. WO9960760 for example, a clock circuit is known that adapts the divisor with which the sampling clock signal is obtained from a master clock to measured characteristics of the communication signal.

Another example of processing equipment that uses adaptable bit periods is
15 equipment that uses the so-called LIN bus protocol. The LIN protocol provides for transmission of a communication signal that contains messages, without transmission of a separate clock signal. Clock signals are produced locally in a receiver of the communication signal. Each message contains a sync field which defines a time interval in which a toggling bit pattern is transmitted. This bit pattern has the bit period that will be used during the
20 message. The sync field allows a receiving circuit to generate a local clock with a correct bit period, usually by selecting one of a number of available bit frequencies.

According to the LIN protocol the sync field is preceded by a so-called sync break that enables the receiver to identify the start of a message and the sync field, which immediately follows the sync break. The sync break contains a unique pattern of bits that
25 cannot occur elsewhere in the messages: a continued low level signal that lasts longer than the separation between successive bytes in the remainder of the message. Thus the sync break functions as a detection interval to determine whether or not a sync field is to follow, and the sync field functions as a measuring interval to measure a bit period.